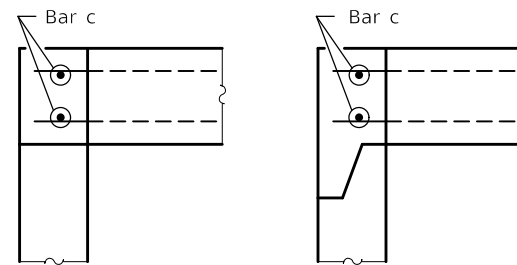
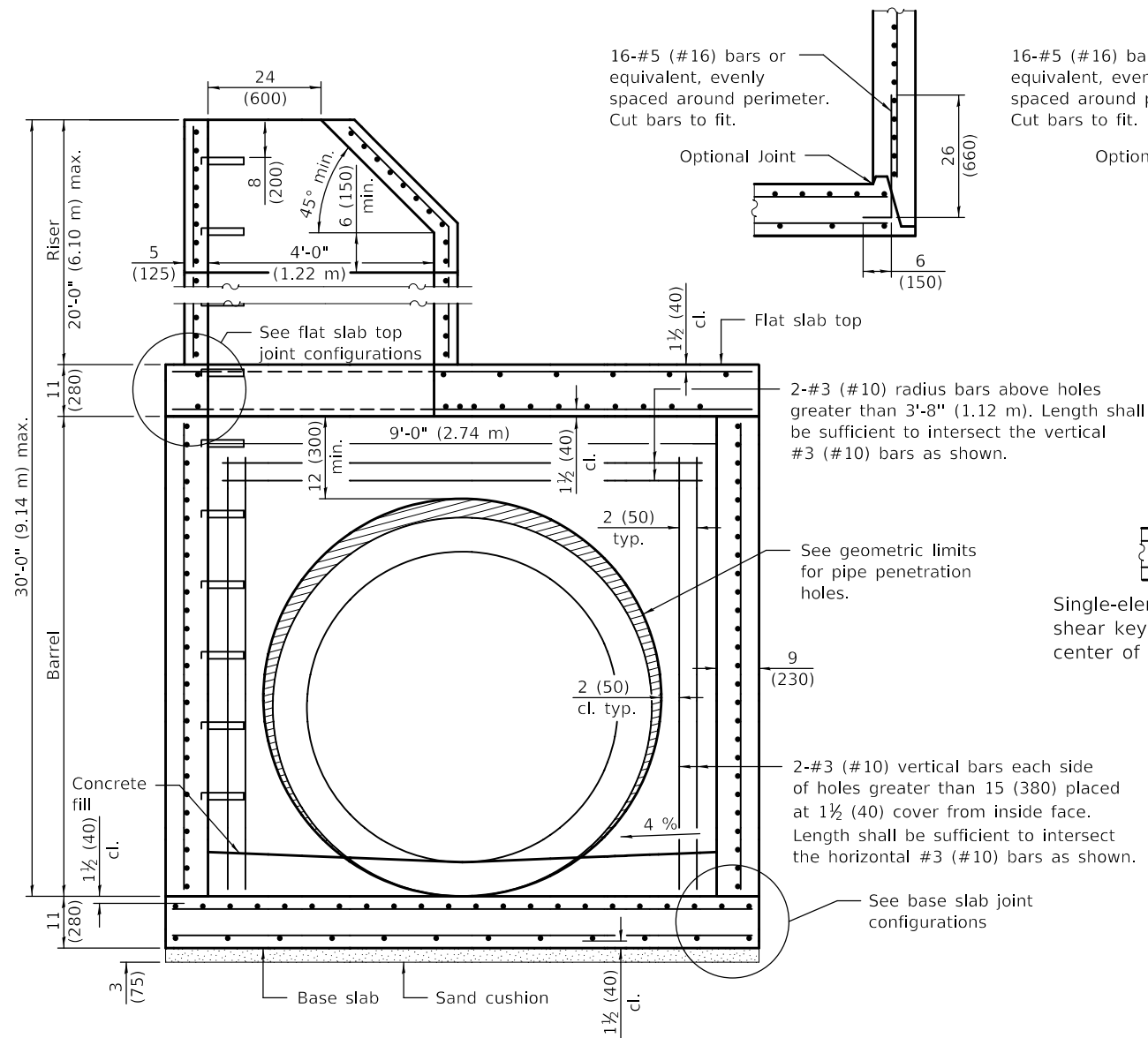


**SECTION PARALLEL TO PIPE**  
(Without conical top riser)



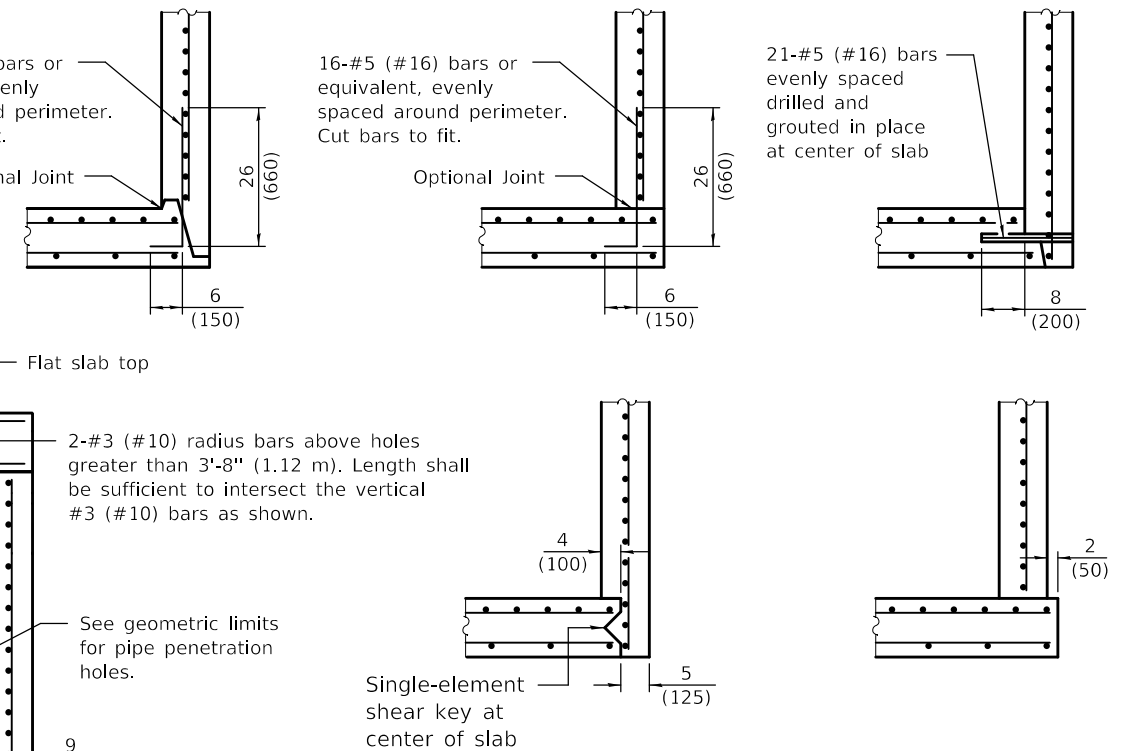
**FLAT SLAB TOP JOINT CONFIGURATIONS**  
(Shown at access hole)



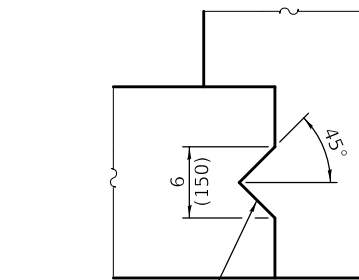
**SECTION PERPENDICULAR TO PIPE**  
(With conical top riser)

**GEOMETRIC LIMITS FOR PIPE PENETRATION HOLES**

1. A minimum of 12 (300) of monolithic reinforced concrete shall be maintained above pipe penetration holes > 3'-8" (1.12 m).
2. A minimum 12 (300) inside arc length of reinforced concrete shall be maintained between pipe penetration holes > 15 (380).
3. A maximum of 60 percent of the inside perimeter of the reinforced concrete manhole walls may be removed.
4. Horizontal joints that intersect pipe penetration holes > 15 (380) shall have one joint splice for every location around the perimeter of the joint where the inside arc length between pipe penetration holes is < 24 (600). See joint splice detail.
5. The recommended pipe penetration hole is equal to the O.D. of the pipe plus 4 (100).
6. Only pipe penetration holes ≤ 15 (380) are allowed in riser sections.



**BASE SLAB JOINT CONFIGURATIONS**



**SHEAR KEY GEOMETRY**  
(Reinforcement not shown for clarity)

**GENERAL NOTES**

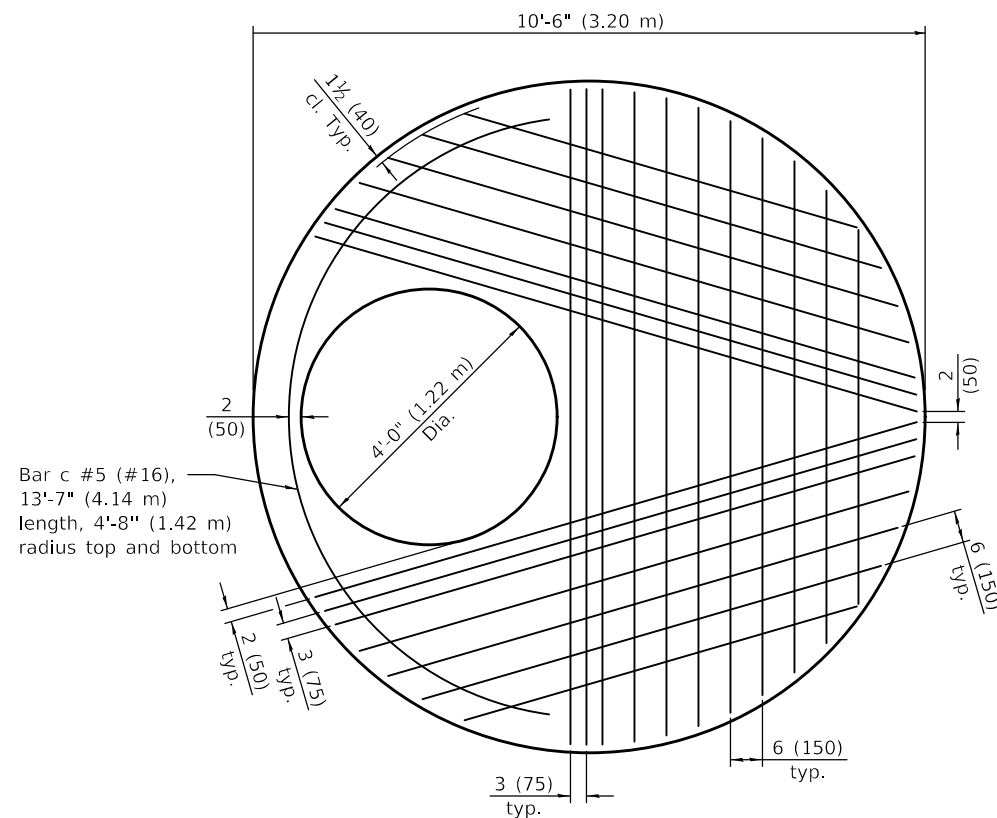
- Pipe holes shall be formed to facilitate proper placement of hole reinforcement.
- The manufacturer shall ensure that all precast manhole sections are additionally reinforced where required to resist damage from handling, shipping and installation stresses.
- Lifting holes shall be located in the sections as per the manufacturer's recommendations, except as noted.
- See Standard 602701 for details of manhole steps.
- All dimensions are in inches (millimeters) unless otherwise noted.

DATE	REVISIONS
3-1-19	Moved wall reinforcement from inside face to middle.
1-1-19	Expanded / refined reinforcement options. Increased manhole depths.

**PRECAST MANHOLE TYPE A**  
**9' (2.74 m) DIAMETER**

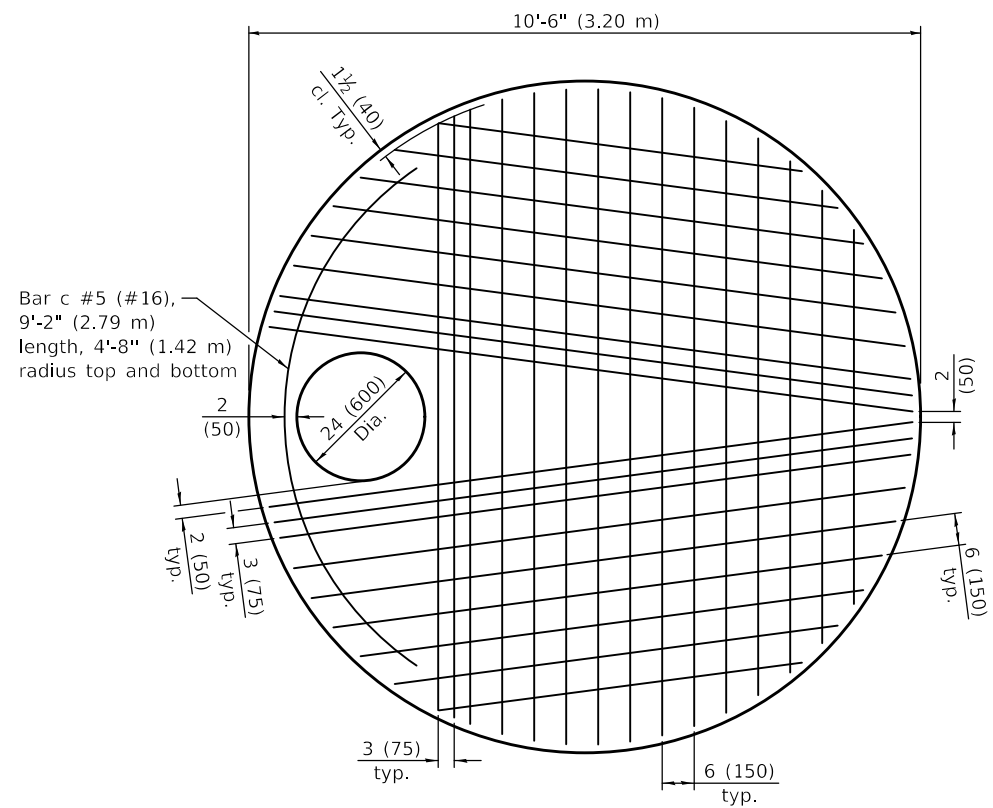
(Sheet 1 of 3)

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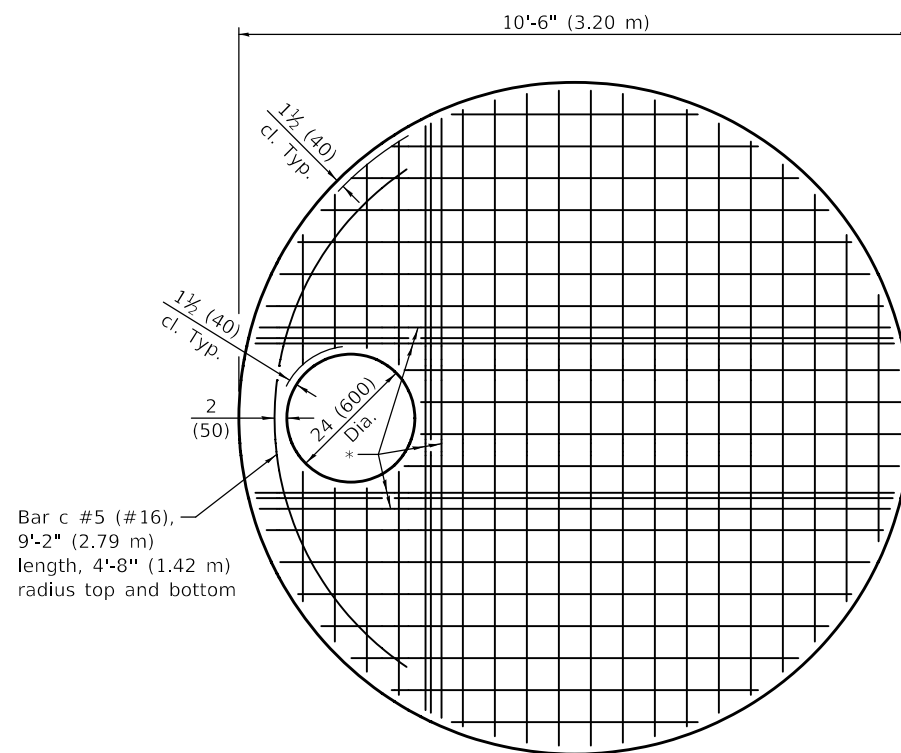
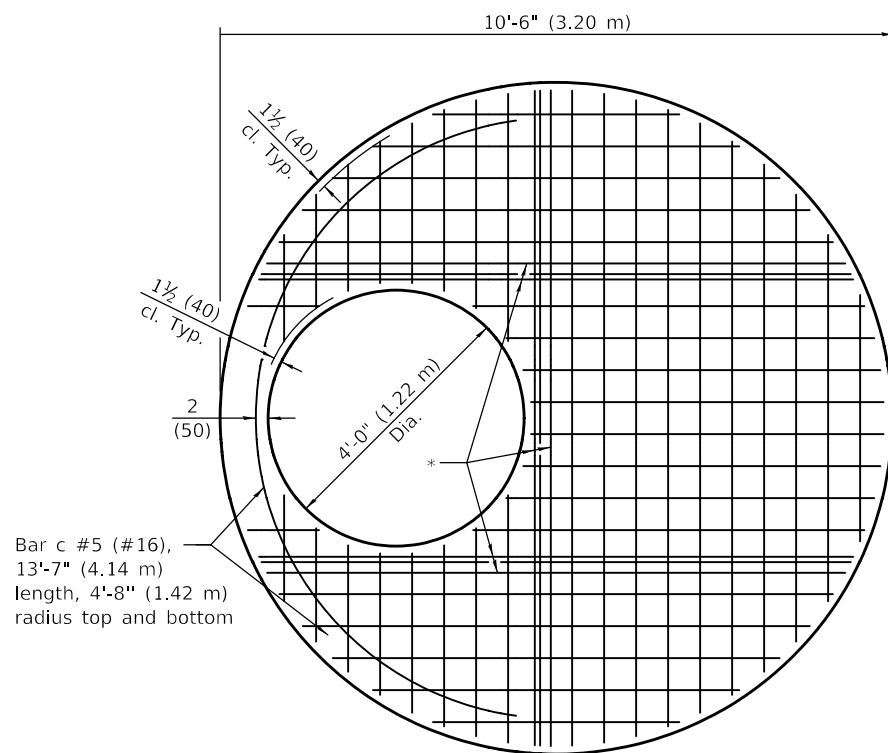
#### PLAN - FLAT SLAB TOP

(Showing layout of bottom reinforcement bars and c bars)



#### PLAN - FLAT SLAB TOP

(Showing layout of welded wire reinforcement and c bars)  
WWR not permitted for riser heights > 10' (3.05 m).



\* #6 (#19) bars bottom. Bundle first bar with closest WWR bar to the opening and place second bar ±3 (75) away.

## PRECAST MANHOLE TYPE A 9' (2.74 m) DIAMETER

(Sheet 2 of 3)

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